

### ABSTRACT

A system and method for detecting changes in tire status in real time, e.g., changes in tire pressure or changes that might indicate an imminent tread separation or other failure, using magnetic sidewall torsion (SWT) signatures for tires. A measured magnetic signature of a tire is compared to a stored magnetic signature that describes the tire in an undamaged state or otherwise acceptable state. If the measured magnetic signature deviates too much from the stored signature, or if a change in tire pressure is detected, the system and method can further provide an associated warning to the driver and/or provide an input to a vehicle control system, which would automatically take action to correct or at least mitigate the effects of the failing tire, e.g., by decelerating the vehicle.